COURSE DESCRIPTION
Students explore the wide range of resources, tools, and trends that reflect the latest approaches to green building. Students examine current and emerging job opportunities, and develop an understanding of the commitment to continuous learning that is required of industry professionals. They also learn about key trends in building design and construction, such as the application of biomimicry, net-zero buildings, and building in high risk zones. Finally, they place green building in a broader sustainability context by completing a home and community design project that maximizes the sustainability and green building concepts they have learned in the course.

Lesson 1: Nothing But Opportunity
In this lesson, students are introduced to the future of green building by hearing what industry spokespeople and educational specialists have to say about the immediate necessity for qualified professionals. Students watch a short documentary video with an eye to future jobs in mind, and research education and training opportunities for professions of interest.

Lesson 2: The New Job of Architects
In this lesson, students view an architect’s job from the eyes of a green builder. This important field is no longer just about creating a livable, functioning space within a given budget. The new buildings being designed must reach mandated reduced levels of energy use as well as function according to any number of green building certifications. Using the Architecture 2030 challenge as a resource, students investigate the role of square footage, types of building materials, careful placement of windows and doors, and energy usage, in the new job of architects.

Lesson 3: Biomimicry: The Genius of Nature
In this lesson, students discover the cutting-edge field of biomimicry, the science of borrowing nature’s design to create better human structures. They put themselves in the inventor’s seat, drawing on knowledge of construction, design, engineering, and technology to create twenty-first century materials.

Lesson 4: Building for Net Zero Energy
In this lesson, students focus on energy use as relates to strict building principles and parameters set by the Passive House Alliance. Creating a house which produces as much as it uses is the future of building. Students develop a solid understanding of the interconnectedness between all systems and materials in a building by studying this cutting-edge approach.

Lesson 5: The New Building Materials
Lesson 6: The Insulation Question

In this lesson, students examine one of the most crucial components of green buildings – the insulation. New products have allowed builders to achieve a higher R-value along with creating a super-tight building envelope. Students experiment with several of the products, drawing firsthand conclusions as to their expected performance and use in a greener building.

Lesson 7: Building Strategies for High Risk Zones

In this lesson, students consider the growing threats posed by weather-related events, as well as the growing responsibility of builders to act as the first line of defense against them. Students create a wall map of the United States, identifying risk zones as well as the mitigation strategies to be used against each type of risk.

Lesson 8: What Our Ancestors Knew

In this lesson, students synthesize the information they have learned about green building by comparing and contrasting present-day environments and needs to the environments and needs of their ancestors. They discover the origins of sustainability while relearning relevant strategies and approaches towards the built environment from those who preceded them.

Lesson 9: The Reemergence of Community

In this lesson, students comprehend the larger picture at the center of the green building movement – community. Our towns and villages were entirely sustainable at one point, but have moved away from this goal with an insular approach to construction. By studying LEED guidelines for Neighborhood Development, students continue to build on their understanding of a green construction future that views the building as part of an inclusive whole rather than an isolated creation.

Lesson 10: Bringing it all Home

In this lesson, students solidify and personalize their understanding of green construction by tackling a leading-edge revision of the home design created in the Building Science unit, coupled with the creation of a community within which to place it. By designing and presenting their vision of the future, they demonstrate a thorough understanding of green building concepts and trends, materials and their use, tools and certifications – all of which have been covered in the course of their study.